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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/876,179 06/13/97 LEE

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EXAMINER

ART UNIT

PAPER NUMBER

2833

20

DATE MAILED:  
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

08/876,179

Applicant(s)

Lee

Examiner

Gushi, Ross

Group Art Unit

2833

☒ Responsive to communication(s) filed on Aug 12, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-8 and 10-18 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-8 and 10-18 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### DETAILED ACTION

1. Upon reconsideration, the prosecution on the merits of the present application is reopened. The finality of the prior Office action is withdrawn. The Amendment Under 37 CFR Section 1.116(b), filed 4/9/99 has been entered.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 through 5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. In claim 1 (twice amended), line 11, applicant claims "a plurality of contact connectors . . . ." As disclosed in the specification, the invention comprises a single 4-pin connector 11 which presumably applicant is referring to, (aside from the first and second connectors 18, 28). Therefore, "a plurality of contact connectors" was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "Plurality" is given no weight in the analysis below.

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*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4, 6-8, 10, 12, 15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Yumibe et al. ("Yumibe").

7. Regarding claim 1 (twice amended), the admitted prior art teaches a hard disk drive comprising:

- a. A body;
- b. A spindle motor 30 supported by the body;
- c. A first connector 28 attached to the body;
- d. A first printed circuit board 46 attached to said body and connected to said spindle motor; and a plurality of contacts 48 mounted on said first printed circuit board;
- e. A second printed circuit board 10 comprising:
  - i. A second connector 18 engageable with the first connector of the disk assembly while the second printed circuit board is attached to the disk assembly; and
- f. A contact connector 40 comprising a plurality of terminals 42 attached to the second printed circuit board, and said contact connector of the second printed circuit board electrically engaging the contacts of the disk assembly to transfer signals between the second

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printed circuit board and the spindle motor when the second connector is engaged with the first connector.

8. The admitted prior art does not teach that the contact connector automatically engages the contacts.

9. Yumibe teaches a connector for connecting the conductors on a first printed circuit board 30 to the conductors of a second printed circuit board 34. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the hard disk drive of the admitted prior art by replacing the connector 40 with the connector 10 as taught by Yumibe. The suggestion or motivation for doing so would have been to optimize space utilization and minimize the space between the adjacent boards, as taught by Yumibe (see col. 1, lines 19-21, 40-45).

10. Per claims 2, 7, 12 (amended), the Yumibe terminals 42 are formed of an elastic, flexible, material.

11. Per claims 3, 8, (twice amended), the first printed circuit board of the admitted prior art is flexible.

12. Per claims 4, 10, (amended), 14 the Yumibe terminals 42 are P-shaped.

13. Per claims 6, 12, the admitted prior art teaches that the second printed circuit board 10 comprises a base and a second connector 18 attached to the base, and a plurality of terminals 42 attached to the base. As modified by Yumibe, by replacing the admitted prior art connector 40 with the Yumibe connector, the terminals would have been in automatically abutting contact with

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the contacts of the disk assembly when the first connector was engaged with the second connector.

14. Per claim 15, in the admitted prior art, the Yumibe terminals are hook shaped.

15. Per claim 17, the admitted prior art first and second connectors are 14 pin connectors.

16. Regarding claim 18, the prior art teaches a "4 pin type of connector." Yumibe does not specifically teach a "4 pin type connector," rather Yumibe shows an 8 terminal configuration for connecting to a circuit board with 8 contact pads (see for example figure 6). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the 8 terminal connector of Yumibe into a 4 terminal connector, for example by halving the connector shown in figure 6. The suggestion or motivation for doing so would have been to use the Yumibe device with the circuit board of the admitted prior art, which has four contact pads or traces.

17. Claims 5, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Yumibe as in claims 3, 7, and 12, and in further view of Schuder et al. ("Schuder").

18. The Yumibe terminals are arguably not "C-shaped." Schuder teaches a set of contact elements 12 or terminals where the terminals are C-shaped (see figures 2, 10). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the shape of the Yumibe terminals to be "C-shaped" as taught by Schuder. The suggestion or motivation

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for doing so would have been a matter of design choice depending on for example the stiffness and elasticity of the material used for the terminal.

19. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Yumibe as in claim 12, and in further view of Broschard, III et al. ("Broschard").

20. The Yumibe terminals are arguably not "V-shaped." Broschard teaches a set of contact elements 12 or terminals where the terminals are V-shaped (see figure 6). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the shape of the Yumibe terminals to be "V-shaped" as taught by Broschard. The suggestion or motivation for doing so would have been a matter of design choice depending on for example the stiffness and elasticity of the material used for the terminal.

#### ***Response to Arguments***

21. Applicant's arguments with respect to claims 1 through 8 and 10 through 18 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***


22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kamo et al. teaches a hard disk drive where the head disk assembly or cartridge 234 is "automatically" connected to driving device 235 by means of connectors 244, 245.

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23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ross Gushi whose telephone number is (703) 306-4508.

September 20, 1999

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